

ATLANTIC OCEANOGRAPHIC AND METEOROLOGICAL LABORATORY

Miami, Florida

The Atlantic Oceanographic and Meteorological Laboratory (AOML) conducts basic and applied research in oceanography, tropical meteorology, atmospheric and oceanic chemistry, and acoustics. The research seeks to understand the physical characteristics and processes of the ocean and the atmosphere, both separately and as a coupled system. The research is divided into three general areas: Oceans and Climate, Coastal and Regional Environments and Tropical Meteorology.

- AOML Oceans and Climate research contributes to understanding and predicting seasonal to decadal shifts in weather patterns and delineating dynamical processes in the coupled global ocean/atmosphere system. AOML scientists monitor and study fluctuations in current systems and thermohaline circulations and their relationship to climatic events ranging from US rainfall rates to hurricane development.
- AOML Coastal and Regional Research contributes to the assessment of current and future effects of human activities on our coastal ocean, e.g.- coastal watershed development and South Florida Ecosystem Restoration. Research projects range from water quality/circulation monitoring in Florida Bay to the development of species specific molecular probes to the development of coral reef monitoring systems.
- AOML Tropical Meteorology aims to improve forecasts and advance the basic physical understanding of hurricanes and tropical meteorology. A key aspect of AOML's Hurricane Research is its annual program of research flights aboard the reconnaissance aircraft and the Gulfstream IV SP jet flown by NOAA's Aircraft Operations Center. In collaboration with Oceans and Coastal team members, hurricane dynamics are also being elucidated using chemical tracers and rainfall patterns are being investigated using in situ acoustic systems.

Brief History

AOML traces its origins to the founding in June 1967 of the Environmental Sciences Service Administration (ESSA) Atlantic Oceanographic Laboratory; it operated in leased office space in Miami, Florida. Construction of a federally owned building specifically designed to house the laboratory was begun on Virginia Key, Florida, in 1969 and completed in 1972. In February 1973 the laboratory was dedicated as the Atlantic Oceanographic and Meteorological Laboratory, part of the then recently formed National Oceanic and Atmospheric Administration.

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Financial Profile (In thousands of dollars)

Fiscal Year	Permanent Funding	Other NOAA	Non- NOAA	Pass Through	TOTAL
FY 2001	8583	4890	2117	2663	18253
FY 2002	10081.3	6724.4	2164.5	1862.1	20832.3
FY 2003	9955.3	5107.1	2011.3	1542.7	18616.4

Personnel Data

FY	FEDERAL EMPLOYEES	JOINT INSTITUTE	Contractors	TOTAL
FY 2000	106.75	63	7	176.75
FY 2001	98.7	40	6	144.7
FY 2002	97	49	8	154
FY 2003	96	46	8	150

Average Age Federal/Scientific/Engineering and Technical Staff 50

Average Age of JI/Scientific/Engineering and Technical Staff 45

Federal Staff	PhD	21% MS	26%
JI Staff	PhD	14% MS	12%

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PARTNERSHIPS	IDENTIFY (and explain)
JOINT INSTITUTES	<p><u>Cooperative Institute for Marine and Atmospheric Studies/University of Miami</u></p> <ul style="list-style-type: none"> • Hurricane research studies jointly with UM faculty and students • Joint Physical Oceanography programs to study ocean dynamics and climate. Joint Seminars. • Carbon Cycle research collaboration • S FL Ecosystem monitoring collaboration <p><u>Joint Institute for Marine and Atmospheric Research/University of Hawaii</u></p> <ul style="list-style-type: none"> • Hurricane research studies jointly with UH faculty and students <p><u>Cooperative Institute for Climate and Ocean Research (CICOR)</u></p> <ul style="list-style-type: none"> • Joint oceanographic and climate studies. Joint Post Docs.
PARTNERSHIPS WITH OTHER LABS	<p><u>Forecast Systems Laboratory</u></p> <ul style="list-style-type: none"> • Development and testing of hurricane WRF research model. Joint program on model validation. <p><u>Geophysical Fluid Dynamics Laboratory</u></p> <ul style="list-style-type: none"> • Evaluation of GFDL hurricane model, and Carbon/Climate models <p><u>Pacific Marine Environmental Laboratory</u></p> <ul style="list-style-type: none"> • Joint oceanographic and climate programs

OTHER OAR PROGRAMS	<p><u>Office of Global Programs (OGP)</u></p> <ul style="list-style-type: none"> • Support for tropical cyclone best track re-analysis project <p><u>US Weather Research Program (USWRP)</u></p> <ul style="list-style-type: none"> • Support for Joint Hurricane Testbed projects <p><u>National and Florida Sea Grant</u></p> <ul style="list-style-type: none"> • South Florida Ecosystem Education Program <p><u>NURP</u></p> <ul style="list-style-type: none"> • Coral partnership with Caribbean Marine Research Center
OTHER NOAA RELATIONSHIPS	<p><u>NCEP/TPC</u></p> <ul style="list-style-type: none"> • Work on development of applications for improved hurricane forecasts of track and intensity <p><u>NCEP/EMC</u></p> <ul style="list-style-type: none"> • Work on development of hurricane data sets for initialization and evaluation of operational models <p><u>NCEP/CPC</u></p> <ul style="list-style-type: none"> • Provide research support for the seasonal tropical cyclone forecasts <p><u>NMAO/AOC</u></p> <ul style="list-style-type: none"> • Work on development of improved instrumentation and observational strategies for hurricane research and support of operational products <p><u>NMFS/SEFSC</u></p> <ul style="list-style-type: none"> • South Florida Ecosystem Restoration • Marine Mammals Studies • Joint Physical Oceanography studies <p><u>NOS/FKNMS</u></p> <ul style="list-style-type: none"> • South Florida Ecosystem Restoration • Coral Reef Research <p><u>NESDIS/NOS/NMFS</u></p> <ul style="list-style-type: none"> • Coral Monitoring Project <p><u>NESDIS</u></p> <ul style="list-style-type: none"> • Coral Reef Early Warning System collaboration

OTHER FEDERAL AGENCIES	<p><u>DoD/ONR</u></p> <ul style="list-style-type: none"> • Support and research under the CBLAST research program in tropical cyclones <p><u>NASA</u></p> <ul style="list-style-type: none"> • Support and research under the CAMEX and TRMM/GPM research programs in tropical cyclones <p><u>FEMA</u></p> <ul style="list-style-type: none"> • Support for the tropical cyclone storm surge program and for the development of the HAZUS tropical cyclone program <p><u>USACE</u></p> <ul style="list-style-type: none"> • Support for their tropical cyclone storm surge efforts in a number of states • Port of Miami Expansion/dredge project <p><u>S FL Restoration Partners:</u></p> <ul style="list-style-type: none"> - USGS - Everglades National Park - US DOT - US Dept. Of Agriculture - EPA - Bureau of Indian Affairs - US Fish and Wildlife Services
STATE AGENCIES	<p><u>State of Florida</u></p> <ul style="list-style-type: none"> • Development of a state wind storm hazards model • Indian River Lagoon Feasability study • FL Bay/FL Keys Feasibility study <p><u>S FL Restoration Patners:</u></p> <ul style="list-style-type: none"> - FL DEP - FL DOT - FL Dept. of Agriculture - Office of the Govenor of Florida - FL Dept. Of Community Affairs

UNIVERSITY PARTNERSHIPS (Cont.)

- Scripps Institute of Oceanography
- NC State
- UNC
- LUMCON (Louisiana Univ. Marine Consortium)
- FL Intern. University
- UF
- Univ. Of S Florida
- FIO (Institute of Oceanography)
- University of Miami - RSMAS
- University of Arizona

NOAA CO2 Collaborators

- U. Washington/APL
- Duke
- Bermuda Biological Station
- U South Florida
- U of Georgia
- U Maine
- MBARI
- Moss Landing
- U Montana
- U.C. Santa Barbara
- Scripps Institute of Oceanography
- Woods Hole
- San Francisco State
- U. Of South Florida
- U.C. Los Angeles
- U. Of Columbia/U LDEO
- Princeton
- Pohang U., Korea
- U . Hawaii
- U. of East Anglia, England
- U. of Paris, France
- Dalhousie U., Canada
- U. of Kiel, Germany
- U. of East Anglia, England

LDEO of Columbia University

- Joint climate and oceanographic studies.
Joint oceanographic cruises. Joint scientific publications.

WHOI

- Joint climate and oceanographic studies.
Joint oceanographic cruises. Joint scientific publications.

RSMAS/UM

- AOML advisors for UM graduate students.

	<p>Joint Coastal studies programs. Joint oceanographic programs. Joint usage of research vessels. Joint programs for data assimilation.</p> <p><u>Scripps Institute of Oceanography</u></p> <ul style="list-style-type: none"> • Partnership in the ARGO project. •
INTERNATIONAL	<ul style="list-style-type: none"> -Central Weather Bureau, Republic of China (Taiwan) -National Taiwan University, Republic of China -Australian Bureau Of Meteorology Research Centre -Canadian Atmospheric Environment Service -Canadian Centre for Remote Sensing -CNRS/Laboratoire d'Aerologie, France -Naional Hydrographic Service, Argentina -LODYC, France -Meteo France, France -IFREMER, France -IRD, France -Sea Fisheries, South Africa -University of Cape Town, South Africa -Institute fur de Mereskunde, Kiel, Germany. -South Hampton Oceanographic Center, UK - NIOZ, Netherlands Insitute of Oceanography
INDUSTRY	<p><u>Royal Caribbean Cruise Lines</u></p> <ul style="list-style-type: none"> • Explorer of the Seas <p>Focal Technologies Benthos Incorporated Tracor International BAE Systems Wet Labs World Precision Instruments SERPE/IESM, Brest France Offshore Analytical CCN Consulting</p>

